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cont
a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween;

wherein said semiconductor layer has at least one region including oxygen at least one boundary region in the vicinity of at least one of a source-channel boundary and a drain-channel boundary at concentration of 1×10^{19} atoms/cm³ or more.

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154. (Amended) A device according to claim 152 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

155. (Amended) A device according to claim 152 wherein said semiconductor [film] layer comprises crystalline silicon.

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157. (Amended) A device according to claim 152 wherein said [portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] display device has transistors selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

REMARKS

Applicants wish to thank the Examiner for the very thorough consideration given the present application. The Examiner's Office Action of **July 28, 2000** has been received and its contents carefully noted. Filed concurrently herewith is a *Request for a One (1) Month Extension of Time* that extends the statutory period for response to **November 28, 2000**. Accordingly, Applicants respectfully submit that this response is timely filed.

Claims 78-157 were pending in this application prior to the aforementioned amendment. Claims 78-104, 106-110, 112-118, 120-126, 130-137, 139-143, 145-146, 148-

149, 151-152, 154-155 and 157 have been amended to more clearly recite protection to which Applicants are entitled. Accordingly, claims 78-157 are now pending in this application and are believed to be in condition for allowance for the reasons stated below.

Paragraph 1 of the Office Action suggests that Figure 4 of the drawings be designated by a legend such as "Prior Art". In accordance to the Examiner's suggestions, Applicants have filed concurrently herewith a *Request for Approval of Drawing Change* to identify Figure 4 as being "Prior Art".

Paragraph 2 of the Office Action objects to the drawings for failing to show every a feature recited in claims 146 and 152. In response thereto, claims 146 and 152 have been amended to remove the objected-to claim limitations.

Paragraphs 4-7 of the Office Action rejects claims 78-157 under 35 U.S.C. 103(a) as being unpatentable over *Wilson et al.* (U.S. Patent No. 4,755,865) in view of *Saito et al.* (U.S. Patent No. 4,772,927), *Shizukuishi et al.* (U.S. Patent No. 4,841,348), and further in view of *Solheim* (U.S. Patent No. 5,219,784), *Higashi* (U.S. Patent No. 4,694,317) and *Parks* (U.S. Patent No. 4,646,424). These grounds of rejection are respectfully traversed for the following reasons and favorable consideration is kindly requested in view thereof.

It should be noted that three criteria must be met to establish a *prima facie* case of obviousness. *M.P.E.P.* §2143. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings to achieve the claimed invention. *Id.* Second, there must be a reasonable expectation of success. *In re Rhinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976). Third, the prior art must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Applicants respectfully submit that neither of the proposed modifications teach or suggest all the claim limitations. In particular, neither of the proposed references expressly teach or implicitly suggest a semiconductor layer having a region containing one or more elements selected from a group consisting of carbon, nitrogen and oxygen at a concentration

of 1×10^{19} atoms/cm³ or more, or a region formed in the vicinity of a boundary region between a channel region and one of a source region and a drain region. For example, in *Wilson*, neither of the regions containing oxygen or nitrogen are located in source and drain regions (See, Fig. 3) and *Saito* teaches that oxygen, nitrogen or carbon is introduced through the whole area of the active region (See, Fig. 1(a)). Accordingly, even if the prior art references were combined as proposed in the Office Action, it would yield a device that fails to render obvious the claimed invention.

Furthermore, Applicants respectfully submit that a *prima facie* case of obviousness has not been set forth in the Office Action since the prior art references are non-analogous to the present invention. "In order to rely on a reference as a basis of rejection of an applicant's invention, the reference must either be in the applicant's field of endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). In the instant case, the present invention is directed to a semiconductor device for use in a display device. Since one of the advantageous results of the present invention is a decrease of the current leakage, as described in the specification on page 7, lines 1-10, it is advantageous that the present invention be used in a pixel region of an active matrix type display device. Moreover, a second advantageous result of the present invention is an elevation of the drain voltage resistance in an effort to improve the reliability of the display device. Also, it is advantageous that the present invention be used in a driver circuit of an active matrix type display device since high operation speed is required for the peripheral circuit.

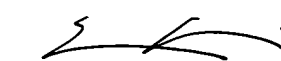
In contrast, while *Wilson*, *Saito* and *Solheim* each appear to be directed to semiconductor devices, they are not employed for application in a display device. And while *Higashi* discloses a solid-state imaging device, it fails to teach an active matrix display device. Consequently, one of ordinary skill in the art would not look to these references when faced with the aforementioned problems which are unique to active matrix type display

devices. Accordingly, for the aforementioned reasons, it is respectfully submitted that the amended claims are patentably distinct over the prior art.

For the above reasons, it is respectively asserted that claims 78-157 are now in proper condition for allowance and reconsideration of the pending rejections is respectively requested. If the Examiner believes that any further discussions would be beneficial in this case, he is invited to contact the undersigned.

Respectfully submitted,

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